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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/082,018	02/20/2002	Li How Chen	10275-133002 / GTC-39C US	8070

31904 7590 11/29/2004

GTC BIOTHERAPEUTICS, INC.  
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EXAMINER

CROUCH, DEBORAH

ART UNIT PAPER NUMBER

1632

DATE MAILED: 11/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

**Application No.**

10/082,018

**Applicant(s)**

CHEN ET AL.

**Examiner**

Deborah Crouch, Ph.D.

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

**A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.**

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 9,13-20,24-30,35-42,47-55,59-66 and 70-76 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 9,13-20,24-30,35-42,47-55,59-66 and 70-76 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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Applicant's arguments filed September 10, 2004 have been fully considered but they are not persuasive. The amendment has been entered. Claims 9, 13-20, 24-30, 35-42, 47-55, 59-66 and 70-76 are pending.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 9, 20, 30, 42, 55 and 66 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Velander (1993) Proc. Natl. Acad. Sci. 89, 12003-12007.

Velander teaches the production of protein C in the milk of transgenic pigs (page 12005, Table 2). Since protein C is composed of amino acids, one of these amino acids constitutes a fragment of MSP-1. Thus, Velander clearly anticipates the claimed invention.

This rejection can be overcome by either inserting a function of the fragment. However, issues under 35 U.S.C. 112, first paragraph, written description could be raised if the specification does not define a fragment as having the particular activity. Otherwise, applicant could cancel reference to a fragment.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 9, 20, 30, 42, 55 and 66 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey

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to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 9, 20, 30, 42, 55 and 66 state "as compared to the wild type nucleic acid sequence encoding MSP-1." However, the only wild type nucleic acid sequence encoding MSP-1 taught in the specification or known in the art at the time of filing is that of SEQ ID NO: 1. There is no evidence that applicant had possession of other nucleic acid sequences encoding MSP-1 at the time of filing.

Vas-Cath Inc. B. Mahurkar, 19USPQ2d 1111 (Fed. Cir. 1991), clearly states that "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention. The invention is, for purposes of the 'written description' inquiry, whatever is now claimed." Vas-Cath Inc. v. Mahurkar, 19USPQ2d at 1117. The specification does not "clearly allow persons of ordinary skill in the art to recognize that (he or she) invented what is claimed." Vas-Cath Inc. v. Mahurkar, 19USPQ2d at 1116.

Based upon the prior art there is expected to be sequence variation among the species of cDNA, which encode MSP-I. There is no evidence on the record of a relationship between the structures of the DNA molecules encoding any MSP-I that would provide any reliable information about the structure of DNA molecules within the genus. There is no evidence on the record that the encompassed nucleic acid molecules had known structural relationships to each other; the art indicated that there is variation between DNA sequences encoding MSP-I. The claimed invention as a whole is not adequately described if the claims require essential or critical elements which are not adequately described in the specification and which is not conventional in the art as of applicants effective filing date.

Possession may be shown by actual reduction to practice, clear depiction of the invention in a detailed drawing, or by describing the invention with sufficient relevant

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identifying characteristics such that a person skilled in the art would recognize that the inventor had possession of the claimed 'invention. *Pfaff v. Wells Electronics. Inc.*, 48 USPQ2d 1641, 1646 (1998).

In the instant case the other nucleotide sequences encoding MSP-I , including fragments thereof, as embraced by the claims within the genus of MSP-I encoding nucleic acid molecules lack a written description.

The specification fails to describe what DNA molecules fall into this genus. The skilled artisan cannot envision the detailed chemical structure of the encompassed DNA molecules, and therefore conception is not achieved until reduction to practice has occurred, regardless of the complexity or simplicity of the method of isolation. Adequate written description requires more than a mere statement that it is part of the invention and reference to a potential method of isolating it. See *Fiers V. Revel* 25 USPQ2d 1601 , 1606 (Fed. Cir. 1993) and *Amgen Inc. F. Chugai Pharmaceutical Co. Ltd.*, 18 USPQ2d 1016 (Fed. Cir. 1991).

One cannot describe what one has not conceived. See *Fiddes B. Baird*, 30 USPQ2d 1481, 1483. In *Fiddes*, claims directed to mammalian FGF'S were found to be unpatentable due to lack of written description for that broad class. The specification provided only the bovine sequence.

In view of the above considerations one of skill in the art would not recognize that applicant was in possession of the necessary common features or attributes possessed by member of the genus of nucleic acid molecules encoding MSP-I. Moreover, the ad has recognized that there would be variation among the species of the genus of DNA molecules that encode MSP-I.

Therefore, Applicant was not in possession of the genus of DNA molecules that encode MSP-I as encompassed by the claims. *University of California v. Eli Lilly and Co.*, 43 USPQ2d 1398, 1404, 1405 held that to fulfill the written description requirement, a patent

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specification must describe an invention and do so in sufficient detail that one skilled in the art can clearly conclude that "the inventor invented the claimed invention."

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 9, 13-20, 24-30, 35-42, 47-55, 59-66 and 70-76 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 9 is confusing as the body of the claim does not refer back to the preamble. Applicant cancelled the phrase "allowing the transgenic mammal to express MSP-1 ...produce MSP-1." This phrase should be added back to the claim. The claim as presently rewritten is to providing a nonhuman transgenic mammal and not to producing MSP-1 in milk. Thus the claim does not correlated to the preamble. Please refer to claim 20.

Claims 9, 55 state "wild type" cordons. This is confusing because mammalian codons are "wild type" to mammals. It is suggested that applicant delete "wild type" in insert protozoan since merozoite are a protozoan. Please refer to claim 20

Claim 9, 20, 30, 42, 55, 66 reads as though the mammalian cells encode the modified merozite protein. It is suggested that applicant insert a "wherein" to signify that the modified protein contains the same amino acid sequence as the naturally occurring merozite protein.

Claims 14-16, 25-27, 39, 51, 60-62, 71-73 are confusing because they written in the past tense inferring that the alteration or modification is already completed or an altered or modified sequence is used in the claims. Applicant should delete "which has been" and insert "is" as appropriate.

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Claims 14-16, 25-27, 39, 51, 60-61, 71-73 do not further limit because there is no reference in claims 9, 20, 30, 42, 55 or 66 that the amino acid sequence to be modified is "wild-type." The only reference to wild type in claims 9, 20, 30, 42, 55 or 66 is with reference to the AT content. If claims 16 or 27 are amended, applicant should review claims 17-19, 28 and 29 for proper dependency, also.

Claim 16, 27, 39, 51, 62, 71-73 does not further limit because claims 9, 20, 30, 42, 55 or 66 state that SEQ ID NO: 2 is the modified nucleic acid sequence.

Claims 17-19, 28, 29, 40, 41, 52, 53, 63-65, 74-76 are confusing as to whether the glycosylation site or the amino acid is nonfunctional. Amino acids are not considered nonfunctional themselves in the present specification. A suggestion is to amend the claims to state the glycosylation site is nonfunctional.

Claims 17-19, 28, 29, 40, 41, 52, 53, 63-65, 74-76, also state "altered" but claims 16, 27, 39, 51, 62 and 73 state "modified." It confusing because the switch in terminology causes uncertainty as to the difference between "altered" and "modified."

Claims 17-19, 28, 29, 40, 41, 52, 53, 63-65, 74-76 are confusing as to "a glycosylation site at position." This is confusing because the claim infers that there is more than one glycosylation site at the claimed amino acids. An amino acid is glycosylated only once, although the sugar may be modified by additional sugars. It is suggested that applicant change "a" to "the."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deborah Crouch, Ph.D. whose telephone number is 571-272-0727. The examiner can normally be reached on M-Th, 8:30 AM to 7:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amy Nelson can be reached on 571-272-0408. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Deborah Crouch, Ph.D.  
Primary Examiner  
Art Unit 1632

November 22, 2004